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MEDI plus TEC Medizinisch-technische
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CLAIMS

1. Safety syringe, having a cylinder (11), a syringe needle (21), a needle holder (31) associated to the cylinder (11) and adapted to hold the syringe needle (21), and a plunger (41) associated to the cylinder (11), wherein the plunger (41) comprises a piston (42) and serves to inject a filling of the cylinder (11) via the syringe needle (21), wherein the plunger (41) can be coupled with the needle holder (31) arranged in the region of a front hole (12) of the cylinder (11), to retract the needle holder (31) together with the syringe needle (21) into the cylinder (11) by pulling the plunger (41), and wherein the needle holder (21) is fixed or fixable in the region of the front hole (12) to the cylinder (11) by a groove-projection-arrangement (13, 34) having axially extending grooves (34) with wide tapered groove entrances for receiving a respective projection (13) so that the projections (13), after having passed the wide entrances and the axially extending grooves (34), can be rotated with respect to the axially extending grooves (34), to axially fix the needle holder (21) in the region of the front hole (12) against retraction into the cylinder (11).
2. Syringe according to claim 1, characterized in that the groove-projection-arrangement (13, 34) is arranged such that the needle holder (21), which is fixed in the region of the front hole (12) to the cylinder (11), can be released for retraction into the cylinder (11) by rotating the needle holder (21) with respect to the cylinder (11).
3. Syringe according to claim 2, characterized in that the coupling between the plunger (41) and the needle holder (21) is adapted, to effect a rotation of the needle holder (21) with respect to the cylinder

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(11) by rotating the plunger (41), which is coupled with the needle holder (21), with respect to the cylinder (11).

4. Syringe according to one of the preceding claims, characterized in that the groove-projection-arrangement (13, 34) comprises grooves (34) located on the outer cylindrical surface (33) of the needle holder (31) and projections (13) located in the region of the front hole (12) on an inner surface of the cylinder (11) to be received in said grooves (34).

5. Syringe according to claim 4, characterized in that said grooves (34) have a first portion which substantially extends in axial direction, and a second portion which substantially extends in a circumferential direction, so that the grooves (34) are substantially L-shaped.

6. Safety syringe, having a cylinder (11), a syringe needle (21), a needle holder (31) associated to the cylinder (11) and adapted to hold the syringe needle (21), and a plunger (41) associated to the cylinder (11), wherein the plunger (41) comprises a piston (42) and serves to inject a filling of the cylinder (11) via the syringe needle (21), wherein the plunger (41) can be coupled with the needle holder (31) arranged in the region of a front hole (12) of the cylinder (11), to retract the needle holder (31) together with the syringe needle (21) into the cylinder (11) by pulling the plunger (41), and wherein the needle holder (21) is fixed or fixable in the region of the front hole (12) to the cylinder (11) by a groove-projection-arrangement (13, 34), said groove-projection-arrangement (13, 34) comprising grooves (34) located on an outer cylindrical surface (33) of the needle holder (31) and projections (13) located in the region of the front hole (12) on an inner surface of the cylinder (11) to be received in said grooves (34), said grooves (34) having a first portion which substantially extends in an axial direction, and a second portion which substantially extends in a circumferential

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direction, so that the grooves are substantially L-shaped.

7. Syringe according to claim 6, characterized in that the groove-projection-arrangement (13, 34) is arranged such that the needle holder (21), which is fixed in the region of the front hole (12) to the cylinder (11), can be released for retraction into the cylinder (11) by rotating the needle holder (21) with respect to the cylinder (11).
8. Syringe according to claim 7, characterized in that the coupling between the plunger (41) and the needle holder (21) is adapted, to effect a rotation of the needle holder (21) with respect to the cylinder (11) by rotating the plunger (41), which is coupled with the needle holder (21), with respect to the cylinder (11).
9. Syringe according to one of the preceding claims, characterized in that the plunger (41) has a predetermined breaking point, to allow that a re-use of the syringe can be inhibited by breaking the plunger (41).
10. Syringe according to one of the preceding claims, characterized in that the plunger (41) carries a cap (49), which can be inserted in the front hole (12) of the cylinder (11) after retraction of the syringe needle (21) into the cylinder (11).
11. Syringe according to claim 9, characterized in that after breaking the plunger (41) a part of the plunger (41) can be inserted in the front hole (12) of the cylinder (11) after retraction of the syringe needle (21) into the cylinder (11).
12. Syringe according to one of the preceding claims, characterized in that the plunger (41) and the needle holder (21) can be coupled by a snap-in connection (43, 43', 37).

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